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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-28 (Canceled)

29. (Previously Presented) A wafer processing apparatus, comprising:

a processing chamber defined by a lower wall, an upper wall and side walls extending from the lower wall to the upper wall, a wafer supply opening being formed in one of the walls for transferring a wafer into the chamber;

a susceptor in the processing chamber on which the wafer can be located so that an upper surface of the wafer faces the upper wall;

a manifold component located on the processing chamber and, together with the upper surface of the upper wall, defining a manifold cavity;

an exhaust line connected to the processing chamber, for flowing an exhaust gas from the processing chamber, connected such that the exhaust gas has a tendency to flow toward the exhaust line; and

a processing gas supply line connected to the manifold component for providing a processing gas into the manifold cavity, wherein the processing gas comprises reactive gases used for processing the wafer, the processing gas supply line connected via a processing gas supply line opening formed through an upper surface of the manifold cavity, wherein the upper wall of the processing chamber comprises a plurality of processing gas supply openings, each of the processing gas supply openings provide an intake opening into an upper surface of the upper wall and an exhaust opening out of a lower surface of the upper wall, to

provide a pathway for flowing processing gas from the manifold cavity into the intake openings and out of the exhaust openings of the processing gas openings in the upper wall, and into the processing chamber, the processing gas supply openings being non-uniformly distributed over the upper wall to create a flow pattern comprising a predominantly vertical flow of processing gas onto the wafer.

30. (Previously presented) The apparatus of claim 29 wherein the openings are more densely located on one side of the upper wall than on another side thereof.

31. (Previously presented) The apparatus of claim 30 wherein the openings are substantially equal in size.

32. (Previously Presented) The apparatus of claim 29 wherein flow of processing gas in the processing chamber is laminar.

33. (Previously Presented) The apparatus of claim 29 wherein the exhaust line is connected at an exhaust location which is off-center with respect to a center point of the wafer, when viewed from above, so that the processing gas exits out of the processing chamber at the exhaust location which is off-center with respect to a center point of the wafer.

34. (Previously Presented) The apparatus of claim 33, further comprising a channel within the processing chamber, wherein the channel is concentric with the wafer, wherein the processing gas flows radially outwardly over the wafer and into the channel, then from the

channel to the exhaust location.

35. (Previously presented) The apparatus of claim 34 wherein the openings are more densely located farther from the exhaust location.

36-37 (Canceled)

38. (Previously Presented) The apparatus of claim 29 wherein the intake openings and the exhaust openings of the processing gas openings on opposing sides of a point on the upper wall, have the exhaust opening of one opening which is angularly displaced relative to the intake opening of the one opening thereof in a selected direction about the point, and the second opening having the exhaust opening which is angularly displaced relative to the intake opening thereof in the selected direction, so that the openings jointly create a circular processing gas flow pattern in the processing chamber.

39. (Previously Presented) The apparatus of claim 38 wherein a third of the openings, on a side of the second opening opposing the first opening, has an exhaust opening which is displaced in the first direction relative to an intake opening thereof.

40. (Previously Presented) The apparatus of claim 29 wherein the processing gas in the manifold cavity comprises non-depleted reactive gases used for processing the wafer.

41. (Previously Presented) The apparatus of claim 40 wherein the openings are formed to increase a flow rate of the processing gas over the wafer farther from the exhaust location.

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42. (Previously Presented) A wafer processing apparatus, comprising:

a processing chamber defined by a lower wall, an upper wall and side walls extending from the lower wall to the upper wall;

a susceptor in the processing chamber on which the wafer can be located so that an upper surface of the wafer faces the upper wall;

a manifold component located on the processing chamber and, together with the upper surface of the upper wall, defining a manifold cavity;

an exhaust system comprising an exhaust line connected to the processing chamber, for flowing an exhaust gas from the processing chamber;

a processing gas supply line connected to the manifold component;

a plurality of processing gas supply openings distributed non-uniformly in the upper wall providing a means for supplying a processing gas from the manifold cavity to the processing chamber, wherein the processing gas comprises non-depleted reactive gases used for processing the wafer, wherein the exhaust gas comprises reacted gases and depleted processing gas, wherein the processing gas supply openings are non-uniformly distributed over the upper wall, wherein the processing gas supply openings, the manifold cavity and component, processing gas supply, and exhaust system predominantly determine the flow pattern of processing gas onto the upper surface of the wafer.

43. (Previously Presented) The apparatus of claim 42, wherein the exhaust line is connected at an exhaust location which is off-center with respect to a center point of the wafer, when viewed from above, so that the processing gas exits out of the processing chamber at the exhaust location which is off-center with respect to a center point of the

wafer.

44. (Previously Presented) The apparatus of claim 42, wherein the processing gas openings comprises openings on the manifold cavity side of the upper wall that differ in location and/or direction than the corresponding openings on the processing chamber side of the upper wall.

45. (Previously Presented) The apparatus of claim 42, wherein the processing gas supply openings create a predominately vertical flow pattern of processing gas onto the upper surface of the wafer.

46. (Previously Presented) The apparatus of claim 42, wherein the processing gas provided into the processing chamber enters predominantly through the processing gas supply openings.

47. (Previously Presented) A wafer processing apparatus, comprising:  
a processing chamber defined by a lower wall, an upper wall and side walls extending from the lower wall to the upper wall;  
a susceptor in the processing chamber on which the wafer can be located so that an upper surface of the wafer faces the upper wall;  
a manifold component located on the processing chamber and, together with the upper surface of the upper wall, defining a manifold cavity;  
a processing gas supply line connected to the manifold component;  
a plurality of processing gas supply openings in the upper wall, wherein a processing

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gas from the manifold cavity passes into the processing chamber, wherein the processing gas comprises reactive gases used for processing the wafer, wherein the processing gas supply openings are non-uniformly distributed over the upper wall; and

an exhaust system comprising an exhaust line connected to the processing chamber, for flowing an exhaust gas from the processing chamber, wherein the exhaust gas comprises reacted gases and depleted processing gas.

48. (Previously Presented) The apparatus of claim 47, wherein the processing gas provided into the processing chamber enters predominantly through the processing gas supply openings.

49. (Previously Presented) The apparatus of claim 47, further comprising a channel within the processing chamber, wherein the channel is concentric and below the wafer, wherein the processing gas flows radially outwardly over the wafer and into the channel, and then from the channel to the exhaust location and into the exhaust line.

50. (Previously Presented) The apparatus of claim 49, wherein the inner diameter of the channel is comparable to or slightly less than the outer diameter of the wafer.

51. (New) The apparatus of claim 29, wherein all the processing gases used for processing the wafer enter the processing chamber only from the plurality of processing gas supply line openings between the manifold cavity and the processing chamber.

52. (New) The apparatus of claim 29, wherein the side walls of the processing chamber prevent processing gases used for processing the wafer from entering the processing chamber through the side walls while the wafer is being processed.

53. (New) The apparatus of claim 32, wherein the processing chamber receives processing gases used for processing the wafer only from the manifold cavity.

54. (New) The apparatus of claim 42, wherein the side walls of the processing chamber prevent processing gases used for processing the wafer from entering the processing chamber through the side walls while the wafer is being processed.

55. (New) The apparatus of claim 42, wherein the processing chamber receives processing gases used for processing the wafer only from the manifold cavity.

56. (New) The apparatus of claim 47, wherein the reactive gases used for processing the wafer enter the processing chamber only from the plurality of processing gas supply line openings between the manifold cavity and the processing chamber.

57. (New) The apparatus of claim 47, wherein the side walls of the processing chamber prevent reactive gases used for processing the wafer from entering the processing chamber through the side walls while the wafer is being processed.